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ABSTRACT

The purpose of this study was to assess school district service capability (full-time equivalent staff per thousand students) as a criterion of program adequacy and to explore the relationship between school district service capability and district enrollment size. Data were collected by obtaining teacher assignment and enrollment for 1977-78 from the Minnesota Department of Education. Service capability scores for each district, development region, and state were obtained by using the Hendrix-Sederberg Service Capability computer program. Analysis shows a strong negative relationship between school district enrollment size and service capability for the aggregate instruction service areas and a consistently positive but weak relationship in special education service areas. Of the 432 school districts, 260 fell below the state mean and only 170 fell above. There were significant differences in service capability between small districts and larger districts. When the recommendations for measuring program adequacy from the Committee of 21 were applied to Minnesota school districts, only a few did not meet the standards. The study demonstrated that the service capability statistic is a useful standard of adequacy for educational programs. The study is part of the research necessary to establish a new system for measuring equity and allocating resources.
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The Relationship Between School District Size and Measures of Program Adequacy (Service Capability)

by

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Introduction

The purpose of this study was to assess school district service capability against several criterion of program adequacy and to explore the relationship between school district service capability and district enrollment size. A secondary purpose was to assess the utility of the service capability statistic for monitoring state equity and governance policy. Service capability is defined as full-time equilavent staff per thousand students in service areas. The study also addressed differences in service capability of school districts when stratified by development regions and enrollment size categories.

Background of the Problem

In his budget address to the Legislature on January 27, 1971, Governor Wendall Anderson stated:

> Section one of Article VIII of the Constitution of Minnesota proclaims that 'The stability of a republican form of government depends mainly on the intelligence of the people, it shall be the duty of the legislature to establish a general and uniform system of education.'
>
> That is a duty State Government has never performed in Minnesota, a mandate it has never fulfilled.
>
> How empty it is to speak of a general and uniform system in Minnesota! Last year the Anoka School District had to levy a tax of $581 on a $20,000 home to spend $536 per pupil for school costs, while Golden Valley School District nearby levied only $369 on a similar home in order to spend $837 per pupil. (34, p. 4)

Governor Anderson was reflecting pressures from the national school reform movement as well as pressures in Minnesota from growing community resistance to rapidly increasing property taxes and a court challenge to the State's school finance system. Aggrieved parents had gone to court and argued for equal protection for their children under the Fourteenth Amendment to the United States Constitution. The object of the court case was to eliminate expenditure differences which arose on the basis of wealth or geography. In the Minnesota case of Van Dusartz vs. Hatfield, et al., a United States district judge denied the defendant's motion to dismiss the charges that the Minnesota school finance system violates the equal protection clause by making expenditures dependent on district wealth. Later, the plaintiffs withdrew their petition, but the judge retained jurisdiction of the case until the results of actions by the 1971 Legislature could be known.

Following a long legislative battle, Governor Anderson on October 30, 1971, signed into law the compromise Omnibus Tax Bill. The new law was designed to correct many of the inequities in school financing in Minnesota by increasing the percentage of maintenance costs paid by the state and provided an aid formula to reduce fiscal disparities among Minnesota school districts.

The 1973 Legislature made additional changes in the school aids system with greater emphasis upon narrowing the expenditure gap between Minnesota school districts. Already in 1973, concern was being felt regarding the long-term impact of these legislative

actions and the ability of state government to be sensitive to the consequences of these major policy shifts. Within this context, in 1973, Governor Anderson requested the State Planning Agency to conduct an analysis to identify major forces at work on the elementary and secondary education system of Minnesota. The resulting report recommended increased efforts by state government to engage in routine monitoring of the health of the educational system.

By 1975, demographic changes were beginning to be felt in many school districts. The state demographer's report of 1975 showed serious enrollment decline expected in all but a few school districts of the state. The State Planning Agency asked of the state and local units:

1) How is the State Department of Education responding? (Assuming it has leadership, assistance and guidance responsibilities.) Answer: Very little action.

2) How are individual school districts responding? Answer: Mostly reactive problem solving, avoidance and blaming state government.

3) What are the 2-10 year fiscal impacts on the state and localities?

4) What are the 2-10 year impacts upon student access to programs and services? (Particularly in low density, sparsely populated rural areas.)

5) What do overall age structure changes mean to the total state education and human services programs? (Changes in demand, in focus, in resource availability and allocation.) (78)

Historically, state-level educational policy-setting has taken place outside or separate from other state policy settings. During the late 1960s to early 1970s, governors and legislatures

began to develop and improve the capacity for analysis, problem solving and planning. The establishment of the Minnesota State Planning Agency in 1967 and its position in the executive branch of state government is an example of a response common to many states. In this role, the Minnesota State Planning Agency in 1976 initiated descriptive feasibility studies and data base development to monitor the equity impact of the 1971 and 1973 fiscal reforms and explore the feasibility of a monitoring system for state-level management and governance decisions in a period of changing conditions in the education sector.

The present study emerges from this work. Twelve education policy studies were conducted, most dealing with school finances. Each of the separate probes were part of developing and testing a monitoring system. The policy report on this test of a monitoring system states:

> One research and development phase of that effort called for the development and field test of a system to monitor the condition and performance of local school districts in relation to state-level educational governance/management policy goals. (76, p. 1)

Two policy concerns were the principal factors in the background of the governance/management monitor study. The first was a governance policy concern for equal access to educational opportunity in Minnesota schools. Educational revenues, expenditures and program offerings were the principal dimensions of the equity concern. The second concern involved management policy questions and was precipitated by the changing demographic trends affecting school enrollment. The two concerns were closely interrelated. Both concerns called for the development of a data

base and a management information subsystem that would routinely address basic policy questions in education.

One phase of the larger study and test of a monitoring system was the development of the statistic service capability as a measure of program adequacy and an alternative criterion for equality of educational opportunity. The timeliness of exploring a new measure for equity is apparent from recent school finance litigation.

In 1974, the United States Supreme Court ruled in the Roderiguez case that the "no wealth difference" issue was not covered by the Fourteenth Amendment. School finance reform cases continued but were argued on the basis of state constitutions. Courts in the states of New Jersey and Washington held that equalization was called for by the "thorough and efficient" clause; the objective became the provision of an adequate education. This is a shift from concern for finance to a concern for education.

The school finance systems emerging from the fiscal reform movement were increasingly complex and based upon many years of legislative and research development and shaping. Moving toward non-fiscal measures for equity introduces the need for new concepts and operational tools. James Coleman emphasizes the importance of policy research being derived from policy decision-making as opposed to disciplinary theory. He says: "Policy research in the social sciences, responsibly addressing real problems of social policy, is relatively new." ... "Yet the increasing demand in questions of social policy for systematic information that will help guide that policy is beginning to change this condition." (44, p. 18) School finance research in the usual mode has had

extensive data bases and links to economic theory. The change to non-fiscal measures will require links to new concepts and theoretical underpinnings and the need for different indices to simplify complexity in the decision-making process.

The dispute around adequate education revolves in whether the real objective is equal expenditure, equal treatment, or equal results. The courts have moved to the equal treatment position. Mr. Justice Marshal said in his Roderriguez dissent that: "... the question of discrimination in educational quality must be deemed to be an objective one that looks at what the state provides its children, not what the children are able to do with what they receive." (63, p. 84) The research tie to input as a measure of equity is to the production function literature. The educational production function is a formal representation of the relationship between school resources and background factors on one hand, and student outcomes on the other.

The relevance of the input measure issue stems from the quest for equality of educational opportunity. The complexity of the issue is increased by competing definitions of "equal," an uncertain relationship between pupil unit revenues and expenditures and taxpayer equity. Input measurement becomes an important policy question in light of state constitutional requirements for a uniform system of public schools and equal protection under the law.

The essence of the governance policy question becomes the criterion of equity. Under the current educational governance

system, it is possible for a state to equalize revenue per pupil unit. However, in a decentralized system, equalized revenue may not produce equalized expenditures because of locally negotiated salary schedules, differing distributions of staff training and experience levels, fluctuating numbers of students, differing program needs and other cost-disequalizing factors. Furthermore, if expenditures were equalized, the same disequalizing factors would produce unequal access to programmatic learning opportunities and services for students. To affect equalization of expenditure, state-level educational government would have to assume control of disequalizing factors present in local districts. Assuming control of these factors would, in large measure, negate local participation in the governance process.

The service capability concept is based on the assumption that education is a labor-intensive industry. Without staff, a school district would be unable to deliver educational services to children. Therefore, the number of full-time equivalent (FTE) staff per thousand students by programmatic area becomes worthy of consideration as an alternative input measure. Its value as a criterion lies in the fact that it is more directly related to the instructional and service purposes of education than are revenues and expenditures. Development of the service capability concept was pursued in this and other studies because of its potential as a fiscally neutral indicator of equality of educational opportunity. The preliminary studies indicated that the service capability measure had promise and warranted further research. The present study pursues that end.

Definition of the Problem

The general problem addressed in this study dealt with the relationship between school districts' enrollment size and their ability to provide access to educational opportunity. The problem was further defined by the following specific research questions:

A. What is the relationship between service capability measures of districts and enrollment size?

B. What degree of variability in service capability existed among Minnesota school districts during the 1977-1978 school year?

C. What differences exist among the mean service capabilities of Minnesota school districts when stratified by development regions?

D. To what extent does variability in service capability of Minnesota school districts differ among development regions?

E. What numbers and proportions of Minnesota school districts with service capabilities less than one standard deviation below the state mean occurs in the state, in each region, and in each size category?

F. What numbers and proportions of Minnesota school districts meet or exceed the standard service capability derived from Committee of 21 recommendations in the state, in each region, and within each size stratification category of school districts?

The present study is only a small part of the research and policy development necessary to establish a new system for measuring equity and allocating resources. The study builds upon preliminary work which has been conducted on the service capability measure. The measure has proven sensitive to change over time. (70) This study adds two more tests of the measure: 1) the relationship between service capability and enrollment size and 2) the capability to measure program adequacy.

Overview of the Research Design

The population in this study consisted of all Minnesota school districts serving grades kindergarten through grade twelve during 1977-1978.

The following steps were taken to collect necessary data:

A. Teacher assignment data was obtained from the State Department of Education Personnel Assignment tape stored with the Minnesota Education Computer Consortium including:

1) district name, number and county;
2) teacher file number;
3) teacher assignment codes;
4) grade level taught;
5) periods per week.

B. Enrollment by district by grade level for 1977-1978 was obtained from State Department of Education Form F23-5.

C. Service capability scores for each district were obtained by using the Hendrix-Sederberg Service Capability computer program, and the same descriptive statistics were obtained for development regions and the state as a whole.

Characteristics of the Measure

The report, Educational Opportunity: The Concept, Its Measurement, and Application, issued by the National Center for Educational Statistics (NCES) provides criteria for the development of resource indicators. (58, pp. 25-26) It is important to cast the service capability indicator against that criterion.

"Simplicity. Although it may be desirable for technical reasons for an indicator to be calculated by a direct and simple mechanism, the simplicity referred to by the NCES report is as viewed by the user. This emphasis on simplicity of understanding will often conflict in some degree with the criteria of comprehensiveness and validity."

The service capability indicator has been adopted by the State Department of Education as an equity measure in its school finance study funded under federal statute, Chapter 842. The members of the project policy committee, legislative and executive branch representatives and staff have been able to grasp the concept and use it in their review of the project. (73)

"Comprehensiveness. It is desirable, as assurance of validity, that a resource indicator encompass as much of the resource in the education system as possible. Although this may be justified by the fact that the indicator includes the largest or most important portion of total resources, such incomplete coverage is acceptable, but only when it is explicitly noted, so that the user can determine whether or not the tradeoff between simplicity and comprehensiveness is satisfactory for a particular application."

The service capability indicator captures all the teacher assignments in the public elementary and secondary schools. It

fails to reflect any of the differences in training, experience, or quality of teachers that might be reflected in salary differences, and it omits all education resources except teachers. Teachers are the overwhelming resource in schools as they are now organized and given present primitive instructional methodologies. There is little variation from the one teacher-one classroom and little use of instructional technologies. Teachers' salaries account for over 60 percent of the operating budgets of schools.

"Validity. It is implicit, in the discussion of simplicity and comprehensiveness, that validity is an important criterion for indicator development. Two points have to be made. First, validity is not an overriding criterion, since it must trade off with simplicity. More important, there are very important limits on the extent to which an indicator can be validated at all, since there is no accepted criterion of what resources should be available to children."

This study of the service capability measure and program adequacy took the approach of developing a norm based on statewide averages of resources provided and a standard established by a policy group. This approach is taken recognizing that validity, like equality, is a relative rather than an absolute goal.

"Feasibility and Cost. It is desirable for an indicator not to require data-collection so frequent or so exhaustive as to increase the expense above reasonable limits. Moreover, an indicator should be acceptable for use as a trend-analysis tool, as well as for a snapshot assessment: this implies that at least some

minimum set of data elements is required periodically, perhaps augmented by less frequent collection for certain other resource elements."

Data for the service capability indicator are routinely collected for Department of Education regulatory and reporting functions. The indicator has proven to be sensitive to trends over time in previous research studies. (70, 75)

Enrollment Size and Stratification

Decisions of enrollment size stratification were based on categories used in previous school finance studies in Minnesota. An attempt was made in the State Planning Agency studies to reach agreement among research, planning, and policy units in government to use similar enrollment size categories so results of studies would reflect certain minimum design features.

Regional Designation

Regional designation is based on legislative and gubernatorial determined aggregates of counties of the state into regions for planning and economic development purposes as defined in the Governor's Executive Orders, No. 8 (9/1/71) and No. 59 (5/29/73). Most substate districting done by state government units take these regional boundaries into account. School district boundaries may cross county and regional lines so assignment of those districts are determined by location of the central office for the school district.

Conversion of Committee of 21 Standards

The Minimum Standards for Secondary Education Task Force

presented its proposed requirements to the State Board of Education on March 1, 1977. Recommended curriculum area and clock hour requirements were:

Curriculum Areas	Grades 7,8,9	Grades 10,11,12	Total
Personal Development	480 hours	480 hours	960 hours
Communications and Cultural Studies	360 hours	480 hours	840 hours
Societal Studies	360 hours	480 hours	840 hours
Mathematics, Science and Technology	480 hours	480 hours	960 hours
Careers and Vocations	360 hours	960 hours	1,320 hours
Electives	840 hours		840 hours
	2,880 hours	2,880 hours	5,760 hours

(80, p. 2)

The task force report adopted previous State Board of Education regulations for total number of days of instruction and for maximum teacher load. State board regulation sets the school year at 175 days and sets the maximum assignment of subjects for any secondary teacher as five periods in a six-period day. The total pupil load for a teacher shall not exceed 160 pupils per day.

The following assumptions and procedures were used to derive a service capability standard for each of the Task Force's curriculum areas.

Assumption

- Districts must offer a minimum of 175 days of school.
- Maximum teacher load of 160 students.

- Maximum teaching periods of five.

The service capability index is the number of full-time equivalent staff per thousand students assigned in a curriculum area. The standard service capability score for each area was derived by the following formula:

$$\text{service capability} = \frac{1{,}000 \times \text{hours}}{160 \times 175 \times 6}$$ Where:

hours = minimal number recommended;
160 = maximum number of students allowed per teacher per day;
175 = minimum number of school days; and
6 = the six secondary school years, i.e., grades 7, 8, 9, 10, 11, 12.

Curriculum Area	Computation		Capability
Personal Development	$\frac{1{,}000 \times 960}{160 \times 175 \times 6}$	=	5.7
Communications and Cultural Studies	$\frac{1{,}000 \times 840}{160 \times 175 \times 6}$	=	5.0
Societal Studies	$\frac{1{,}000 \times 840}{160 \times 175 \times 6}$	=	5.0
Mathematics, Science, and Technology	$\frac{1{,}000 \times 960}{160 \times 175 \times 6}$	=	5.7
Careers and Vocations	$\frac{1{,}000 \times 1{,}320}{160 \times 175 \times 6}$	=	7.85
Electives	$\frac{1{,}000 \times 840}{160 \times 175 \times 6}$	=	5.0
Total Secondary Regular Instruction			34.25

The Hendrix-Sederberg Taxonomy collapses into the five curriculum areas in the following way:

Curriculum Areas	Taxonomy
Personal Development	- Art - Health, Physical Education, and Safety

Curriculum Areas	Taxonomy
	- Music
Communications and Cultural Studies	- Foreign Language - English Language Arts
Societal Studies	- Social Science
Mathematics, Science, and Technology	- Mathematics - Natural Science
Careers and Vocations	- Agriculture - Distributive Education - Health Occupations - Home Economics - Industrial Arts - Office and Business Education - Trades and Industry - Other Vocational-Technical

Analysis Procedures

The following analysis was conducted and data treated to respond to the research questions stated in Chapter I.

Question A. The relationship between service capability of school districts and enrollment size were determined through use of regression with natural log, square root and third degree polynomial transformation on size. The natural log transformation gave the best fit.

Question B. The degree of variability in service capability among Minnesota school districts were described by descriptive statistics, i.e., means and standard deviations and frequence distributions.

Question C. Differences among the mean service capabilities of Minnesota school districts when stratified by development regions were determined by one-way analysis of variance.

Question D. Difference in variability of service capability among development regions was determined by comparing regional variances using Bartlett's homogeneity of variance test. (18, pp. 291-298)

Question E. The number and proportion of school districts with service capability greater than or equal to or less than one standard deviation below the state mean in the state, in each region, and in each size category were ascertained by contingency tables using a chi square test.

Question F. The number and proportion of Minnesota school districts within each region, each size stratification, and the state which meet or exceed the standard service capability derived from the Committee of 21 recommendations were determined by contingency tables using a chi square test.

FINDINGS OF THE STUDY

Findings of the Study

Research Question A

Research question A asked, "What is the relationship between service capability measures and enrollment size?" The relationship between service capability of school districts and enrollment size was determined through use of regression techniques. Three techniques were explored to determine the best fit: natural log, square root and third degree polynomial transformations on size. The natural log transformations gave the best fit.

Findings

Table 1 shows the results of the test of relationships for thirty-eight of the sixty service areas of the taxonomy. F ratios were computed and were significant at the .05 level for thirty-seven of the thirty-eight service areas. Most of the coefficients are small indicating that the relationship is weak.

There are important deviations from that general observation, however. The larger aggregate instructional service areas show a much stronger relationship than more specialized service areas. Analysis shows a strong negative relationship between school district enrollment size and service capability scores for Total Elementary Regular Instruction ($r^2 = .34$, $r = .58$), Total Secondary Regular Instruction ($r^2 = .36$, $r = .60$), Total Regular Instruction ($r^2 = .46$, $r = .68$), and Total Licensed District Staff ($r^2 = .39$, $r = .62$).

TABLE 1

THE RELATIONSHIP BETWEEN SERVICE CAPABILITY AND ENROLLMENT SIZE OF MINNESOTA SCHOOL DISTRICTS, 1977-1978

$Y = a \times b\ (\ln(x))$

Variable	r^2	a	b	F
Total Administration	.55	13.63	-1.39	532.92*
Early Elementary Regular	.12	56.24	-4.32	60.27*
Grades One through Six	.26	83.60	-5.11	153.57*
Total Elementary Regular	.34	95 17	-6.31	219.22*
Secondary Agriculture	.09	5.62	- .58	42.17*
Secondary Art	.01	.87	.13	5.88*
Secondary Bus. and Office	.41	11.27	-1.08	297.90*
Secondary Distributive Ed.	.07	- .42	.95	31.19*
Secondary English	.06	12.99	- .52	26.21*
Secondary Foreign Languages	.18	-1.64	.34	96.63*
Secondary Health Occupation	.01	.35	- .27	6.04*
Secondary Health, Phy. Ed.	.02	6.37	- .26	9.71*
Secondary Home Economics	.31	10.59	- .99	189.98*
Secondary Industrial Arts	.02	5.49	- .27	10.04*
Secondary Mathematics	.16	11.68	- .77	81.49*
Secondary Music	.24	8.79	- .76	137.92*
Secondary Natural Science	.17	10.87	- .72	89.68*
Secondary Social Studies	.04	10.34	- .40	18.15*
Secondary Trade and Industry	.004	1.29	- .61	1.85
Secondary Other Sec. Vo.-Tech.	.19	-1.06	.19	101.38*
Secondary Other	.05	7.22	- .79	21.69*
Total Secondary Regular	.36	100.64	-6.48	236.82*
Total Regular Instruction	.46	97.34	-6.32	373.46*
Early Elementary Spec. Ed.	.05	- .36	.64	24.51*
Elementary M.R.	.05	-1.22	.42	20.49*
Elementary Speech Therapy	.02	.23	.18	7.04*
Elementary S.L.D.			did not run	
Elementary Physically Handicap.	.01	- .18	.44	6.87*
Total Elementary Spec. Ed.	.04	1.03	.76	17.21*
Secondary M.R.	.05	- .93	.33	21.38*
Secondary Speech Therapy	.03	- .12	.24	15.58*
Secondary S.L.D.	.02	.21	.24	9.65*

* significant at .05 level, degrees of freedom = 1/430

Variable	r^2	a	b	F
Secondary Physically Handicap.	.02	- .17	.34	9.32*
Total Secondary Spec. Ed.	.08	-1.00	.63	36.17*
Total Spec. Ed.	.08	- .16	.68	35.44*
Total Pupil Personnel	.36	-2.51	.53	241.22*
Total Library-Media	.07	2.88	- .19	29.97*
Total Licensed District Staff	.39	111.14	-6.50	276.99*

* significant at .05 level, degrees of freedom = 1/430.

The negative sign on the log n for each of these categories indicates that service capability scores decrease as enrollment size increases. In nearly all other service areas of regular instruction the same negative relation is evident, however weak.

Figures 1-3 further describe the strong negative relationship between the aggregate instructional service areas and enrollment size. The graphs show a fit to a negative regression line showing a rapid decline in service capability to an enrollment size of about 1,000 students and then a leveling off.

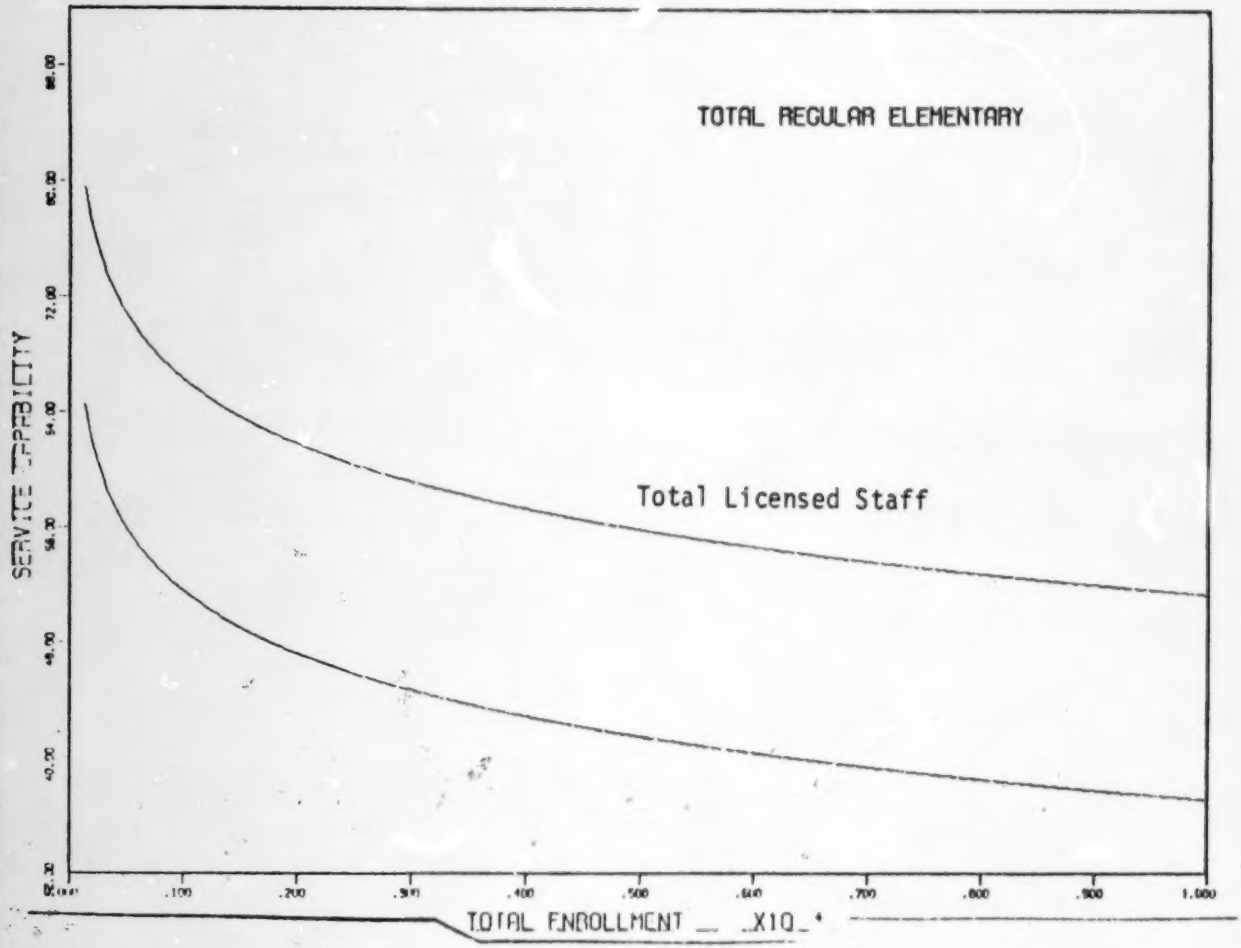
In summary, the data show that there is a relationship between district service capability and district enrollment size. That relationship is significant but not useful for most specialized service areas. The relationship is strong and negative for the aggregate instruction service areas and consistently positive, but weak, in special education service areas.

Research Question B

Research question B asked, "What degree of variability in service capability existed among Minnesota school districts during the 1977-1978 school year?" Descriptive statistics were used to show the variability in service capability scores among Minnesota school districts for the sixty service areas of the taxonomy.

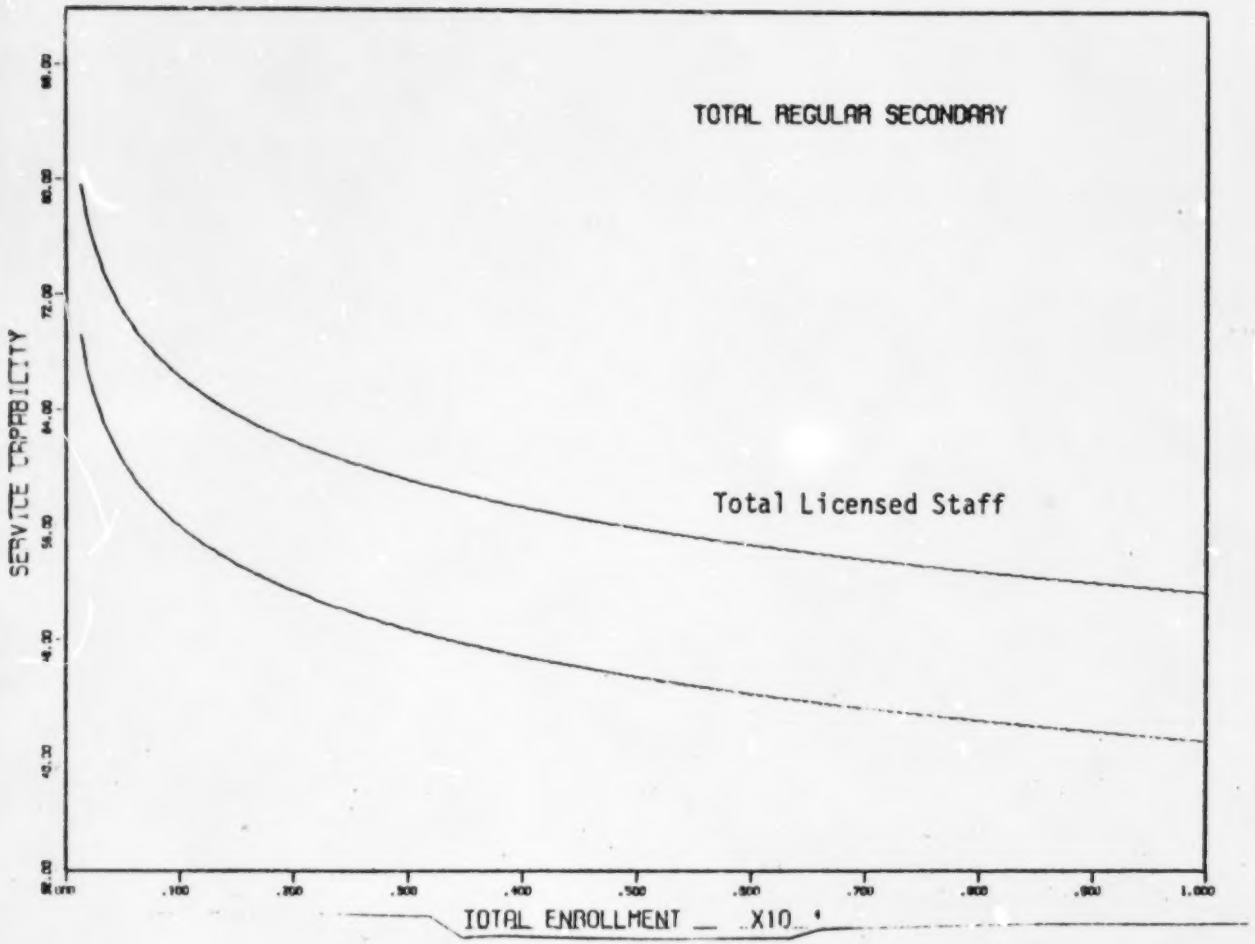
Nine service areas of the taxonomy were chosen for further analysis. The service areas chosen were the larger assignment aggregations, a representative category in secondary instruction, and one special education. The analysis of the secondary instruction subcategory was to observe if it differed from the larger aggregation. Even though the service capability

FIGURE 1



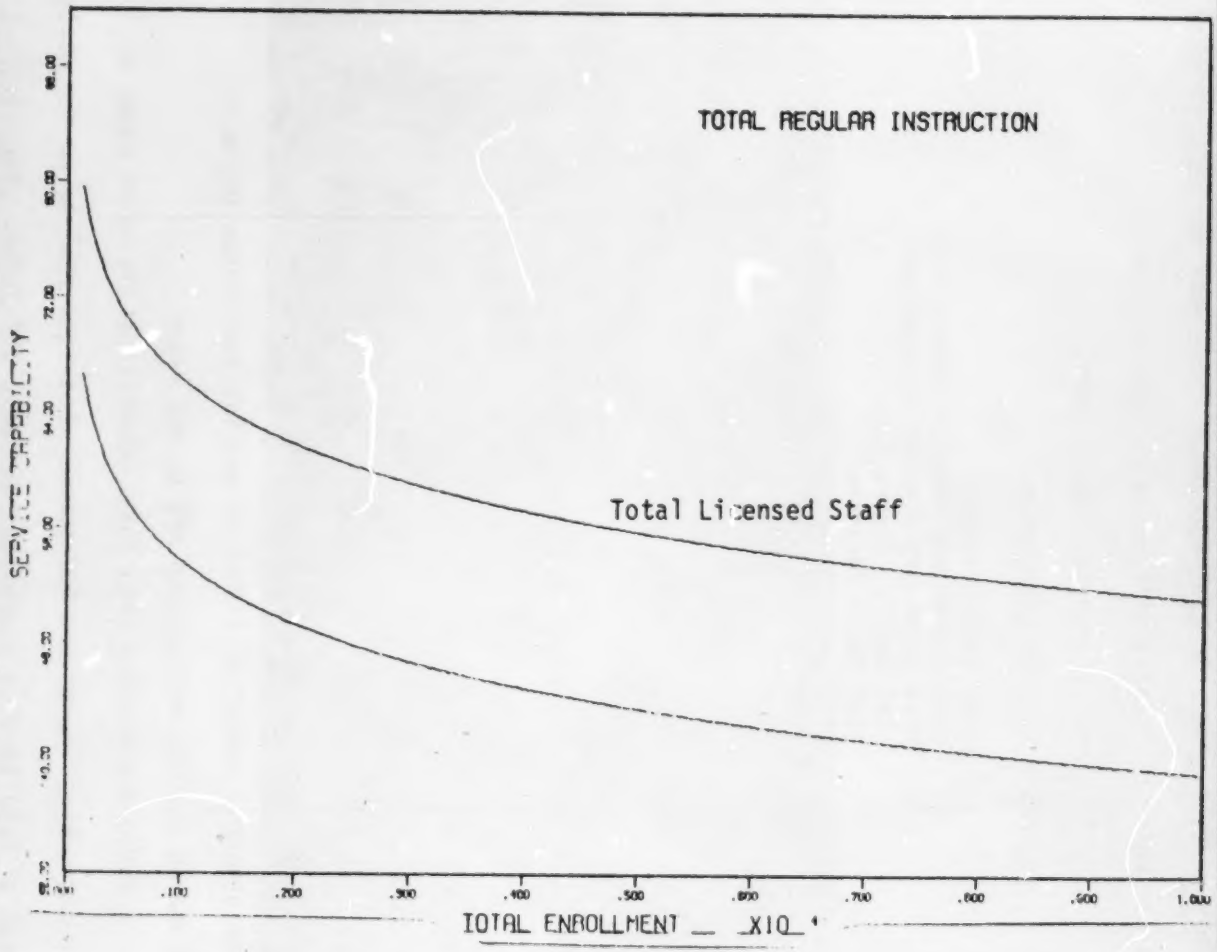
THE RELATIONSHIP BETWEEN SERVICE CAPABILITY AND ENROLLMENT SIZE
OF MINNESOTA SCHOOL DISTRICTS, 1977-1978
(Total Licensed Staff as a constant)

FIGURE 2



THE RELATIONSHIP BETWEEN SERVICE CAPABILITY AND ENROLLMENT SIZE
OF MINNESOTA SCHOOL DISTRICTS, 1977-1978
(Total Licensed Staff as a constant)

FIGURE 3



THE RELATIONSHIP BETWEEN SERVICE CAPABILITY AND ENROLLMENT SIZE
OF MINNESOTA SCHOOL DISTRICTS, 1977-1978
(Total Licensed Staff as a constant)

measure for special education is not entirely reliable because of reporting anomalies, it was important to analyze the service capability measure's ability to be sensitive to differences in this service area. Special education represents the only service area which has statutorily mandated service levels.

The taxonomic categories chosen were:

Aggregate Service Categories:

1. Total Administration
2. Total Elementary Regular Instruction
3. Total Secondary Regular Instruction
4. Total Regular Instruction
5. Total Pupil Personnel
6. Total Library-Media
7. Total Licensed District Staff

Figures 4-12 display the frequency distribution of each service area. The frequency intervals are in one-half standard deviations above and below the state mean for that service area. The mean and standard deviation is used in later research questions as criterion levels so this interval system was used.

Findings

The aggregate service areas and the secondary instruction area show the same pattern. The frequency distribution shows the greatest number of districts peaking just below the mean, dropping sharply and tailing off to the right.

Using the service area Total Administration as an example, it shows that 260 of the 432 school districts fall below the state mean of 4.17 service capability and only 170 above. The district with the lowest service capability has a score of 1.4 which is 1.42 standard deviations below the mean. The high district has a service capability score of 13.56 which is 4.81 standard de-

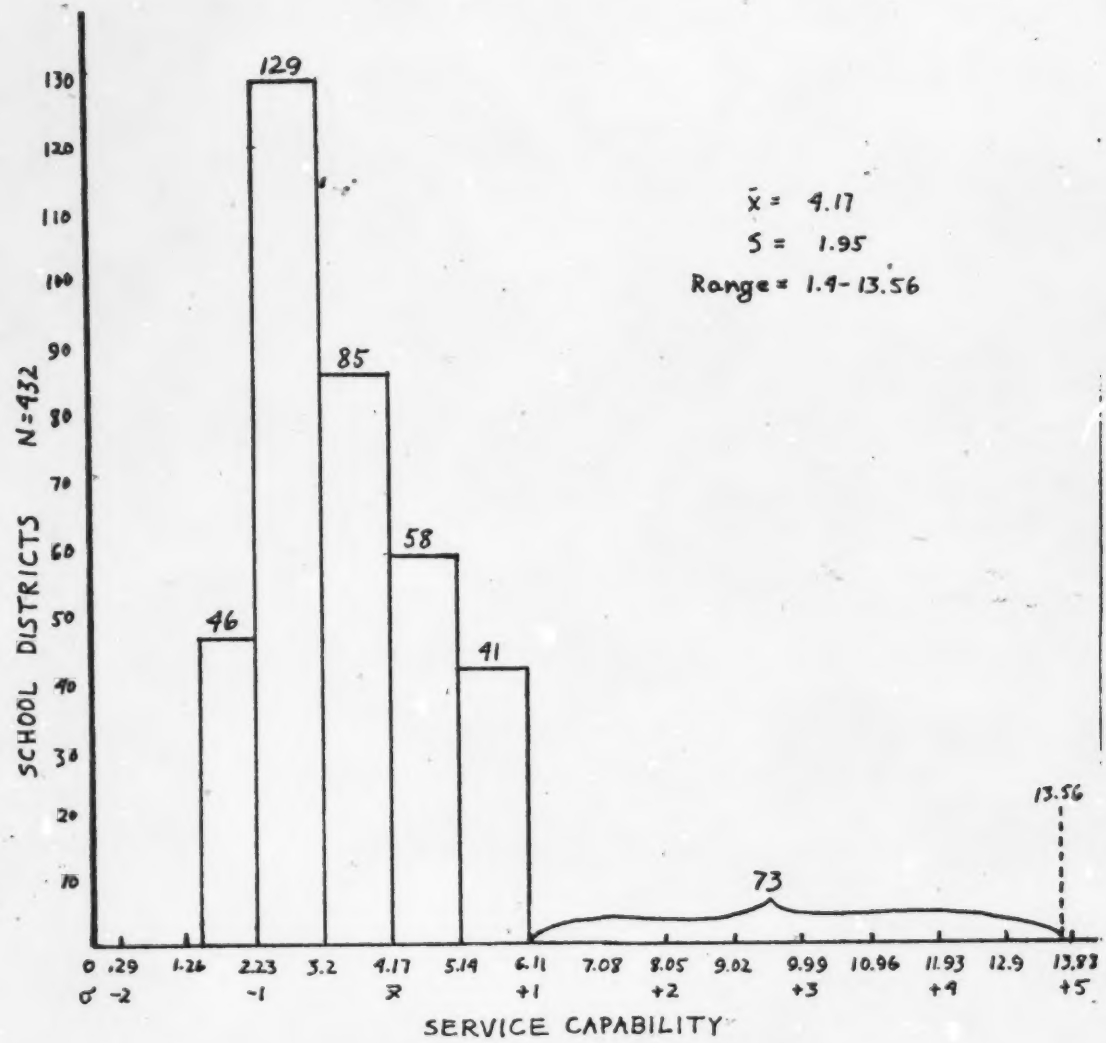


FIGURE 4

DISTRIBUTION OF SCHOOL DISTRICT SERVICE CAPABILITY SCORES
1977-1978

TOTAL ADMINISTRATION

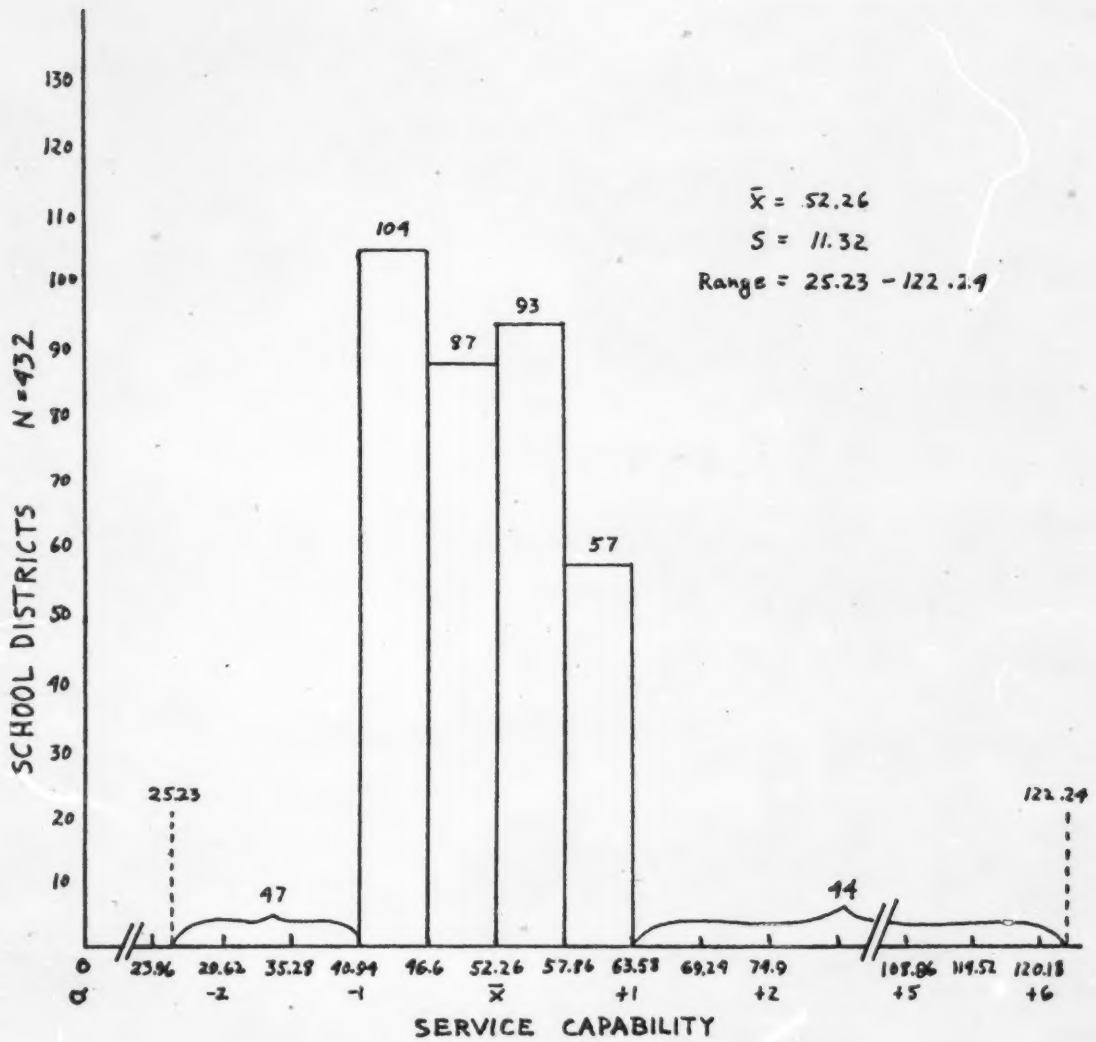


FIGURE 5

DISTRIBUTION OF SCHOOL DISTRICT SERVICE CAPABILITY SCORES, 1977-1978

TOTAL ELEMENTARY REGULAR INSTRUCTION

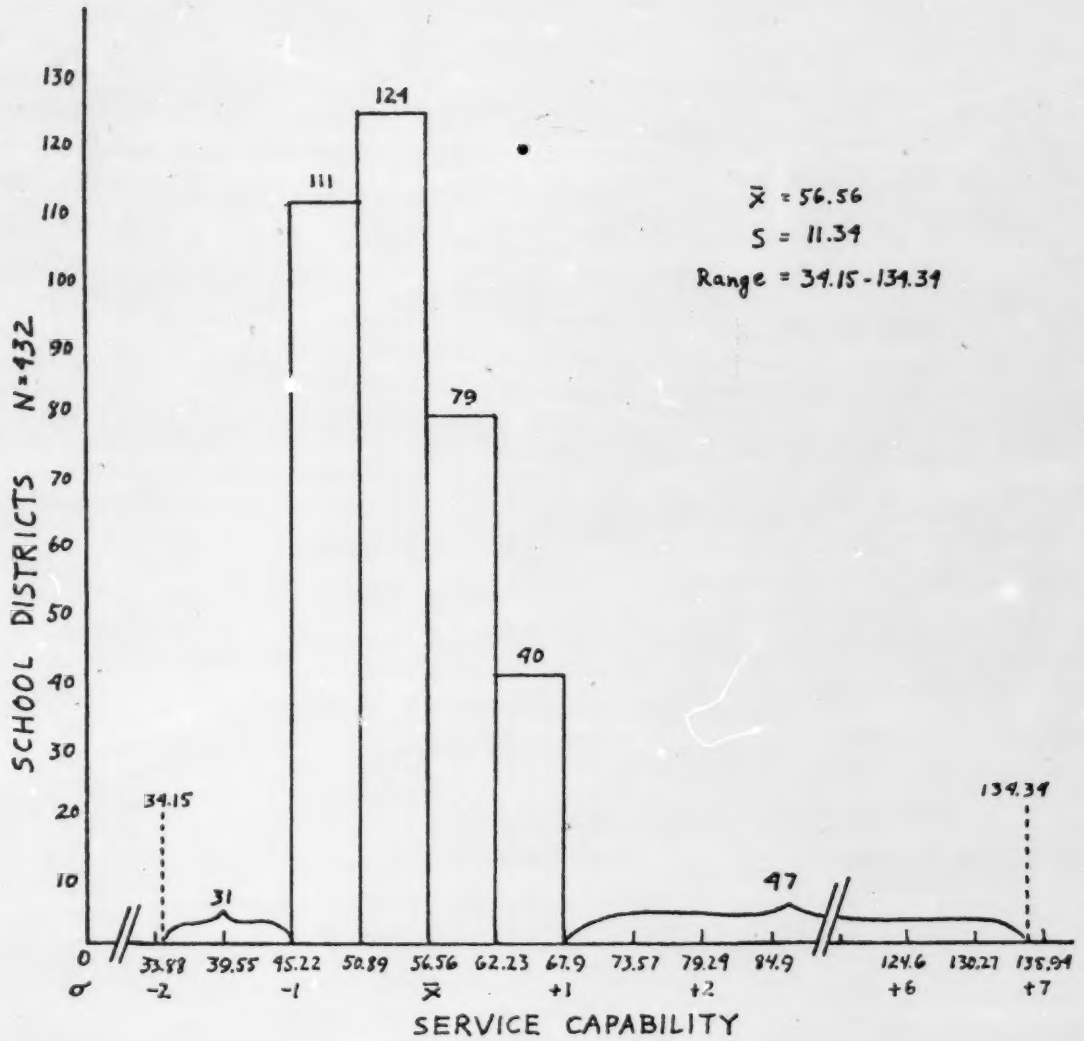


FIGURE 6

DISTRIBUTION OF SCHOOL DISTRICT SERVICE CAPABILITY SCORES, 1977-1978

TOTAL SECONDARY REGULAR INSTRUCTION

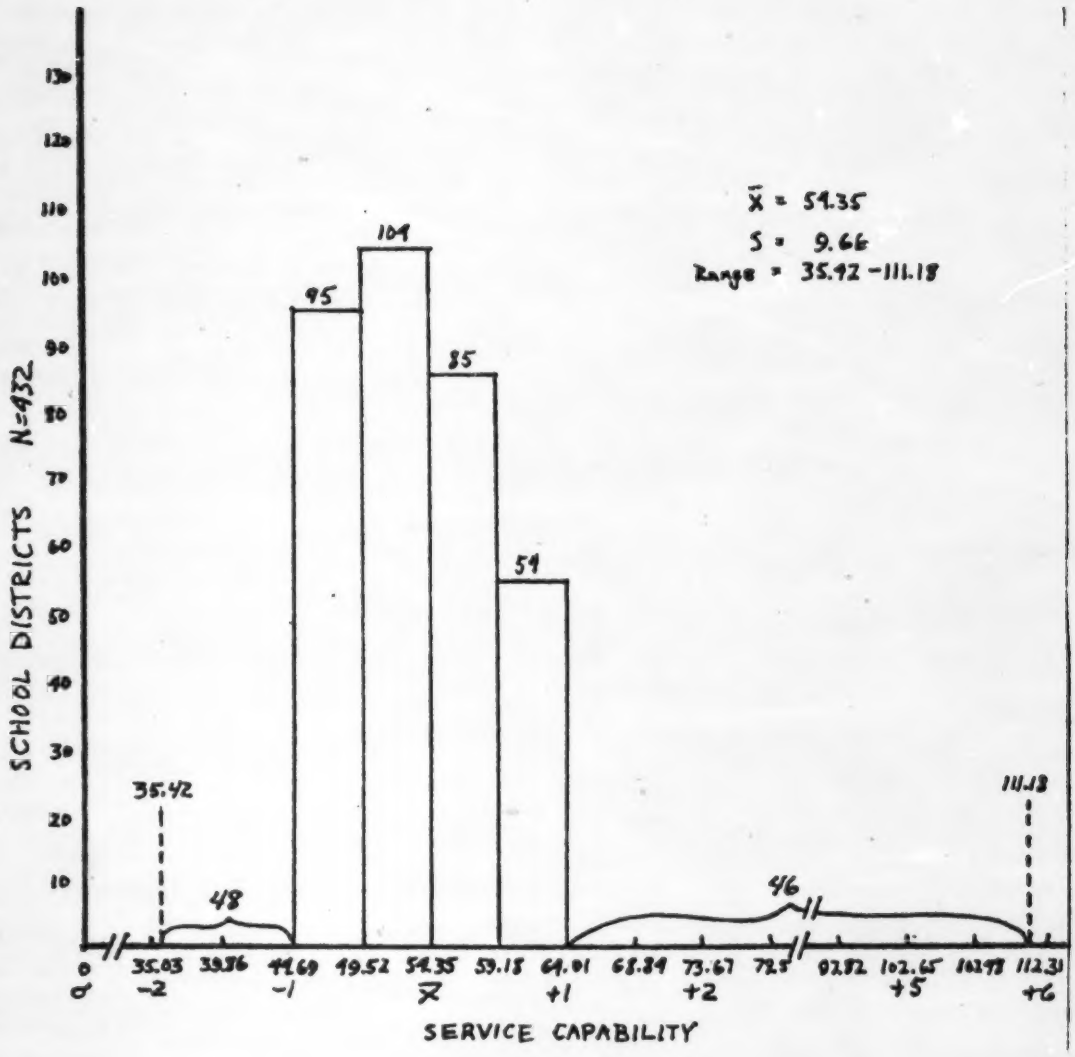


FIGURE 7

DISTRIBUTION OF SCHOOL DISTRICT SERVICE CAPABILITY SCORES, 1977-1978

TOTAL REGULAR INSTRUCTION

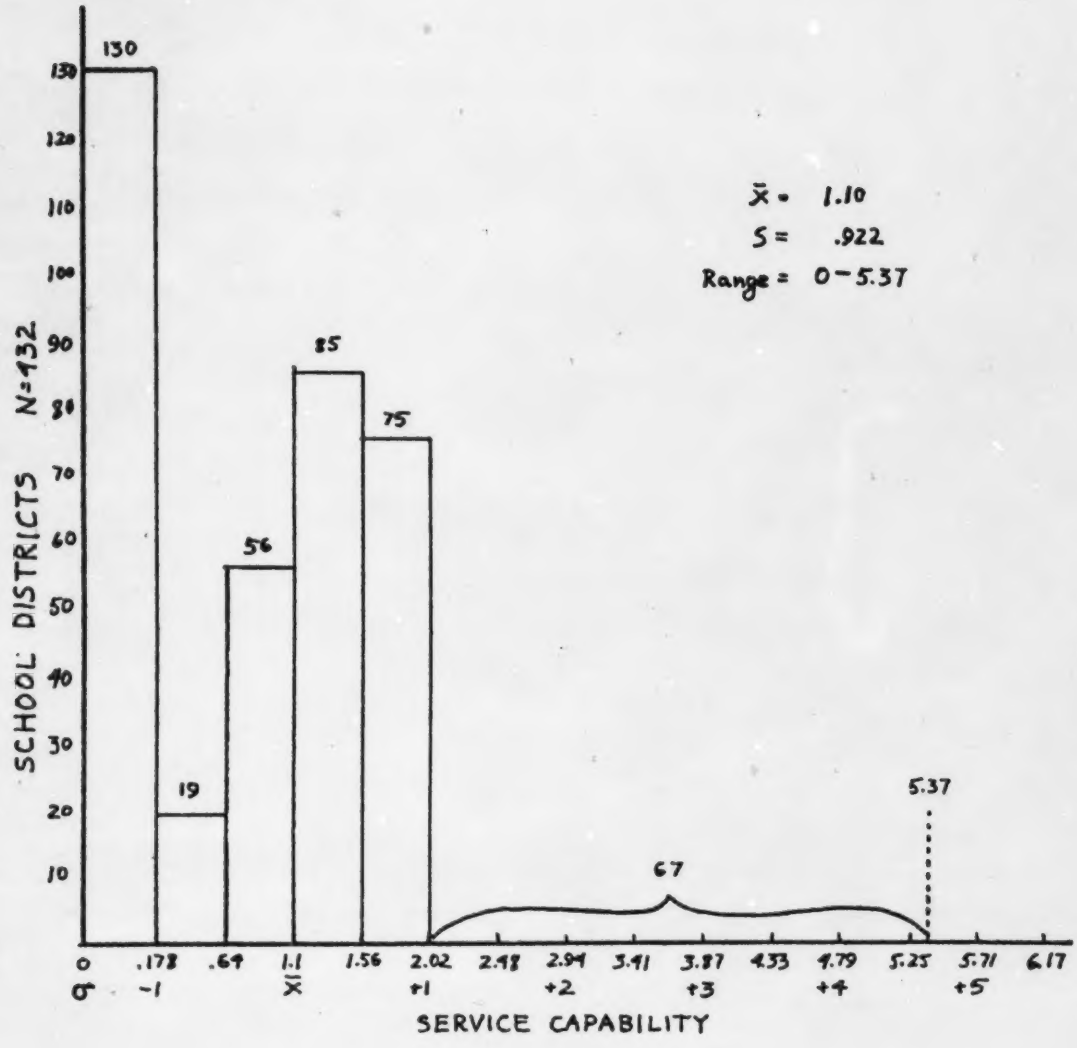


FIGURE 8

DISTRIBUTION OF SCHOOL DISTRICT SERVICE CAPABILITY SCORES, 1977-1978

TOTAL PUPIL PERSONNEL

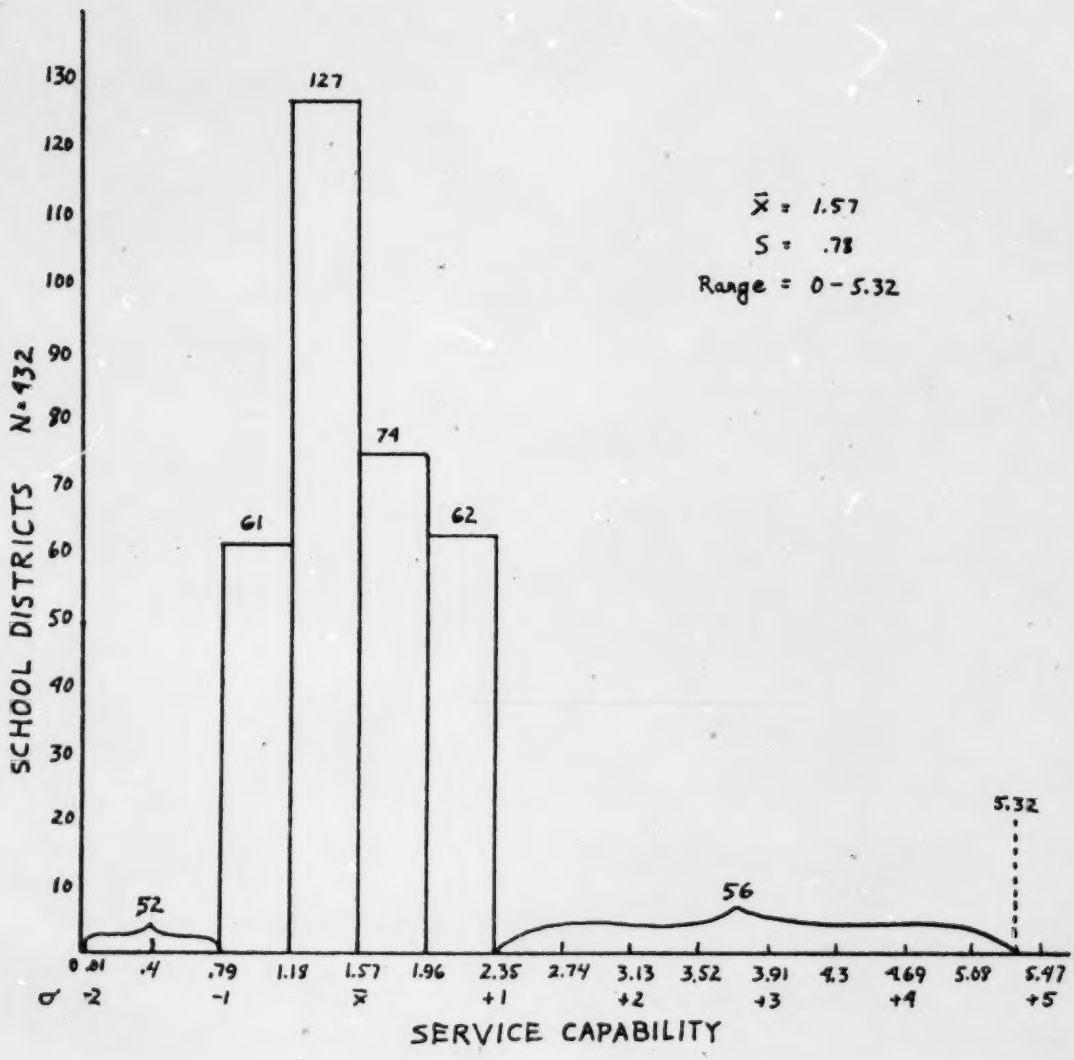


FIGURE 9

DISTRIBUTION OF SCHOOL DISTRICT SERVICE CAPABILITY SCORES, 1977-1978

TOTAL LIBRARY-MEDIA

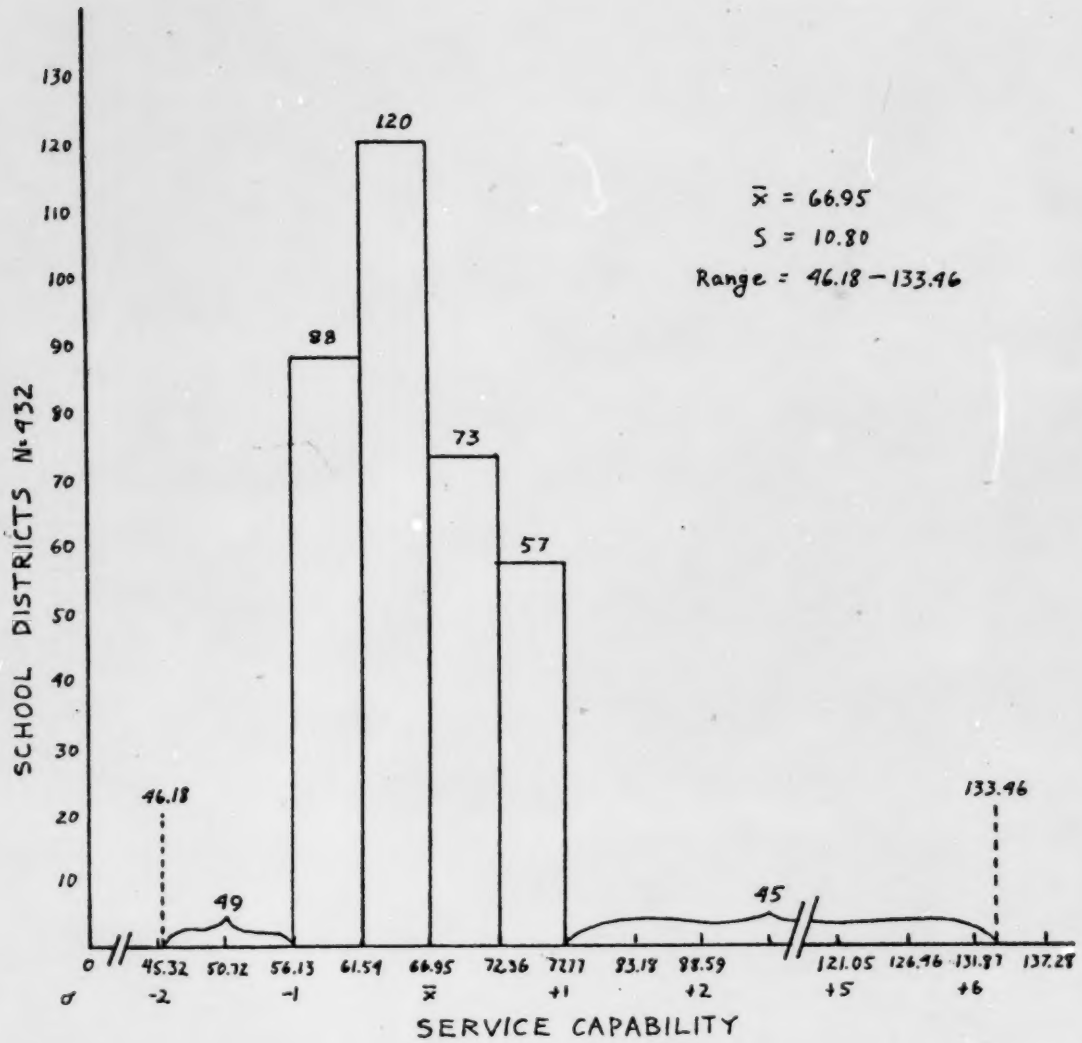


FIGURE 10

DISTRIBUTION OF SCHOOL DISTRICT SERVICE CAPABILITY SCORES, 1977-1978

TOTAL LICENSED DISTRICT STAFF

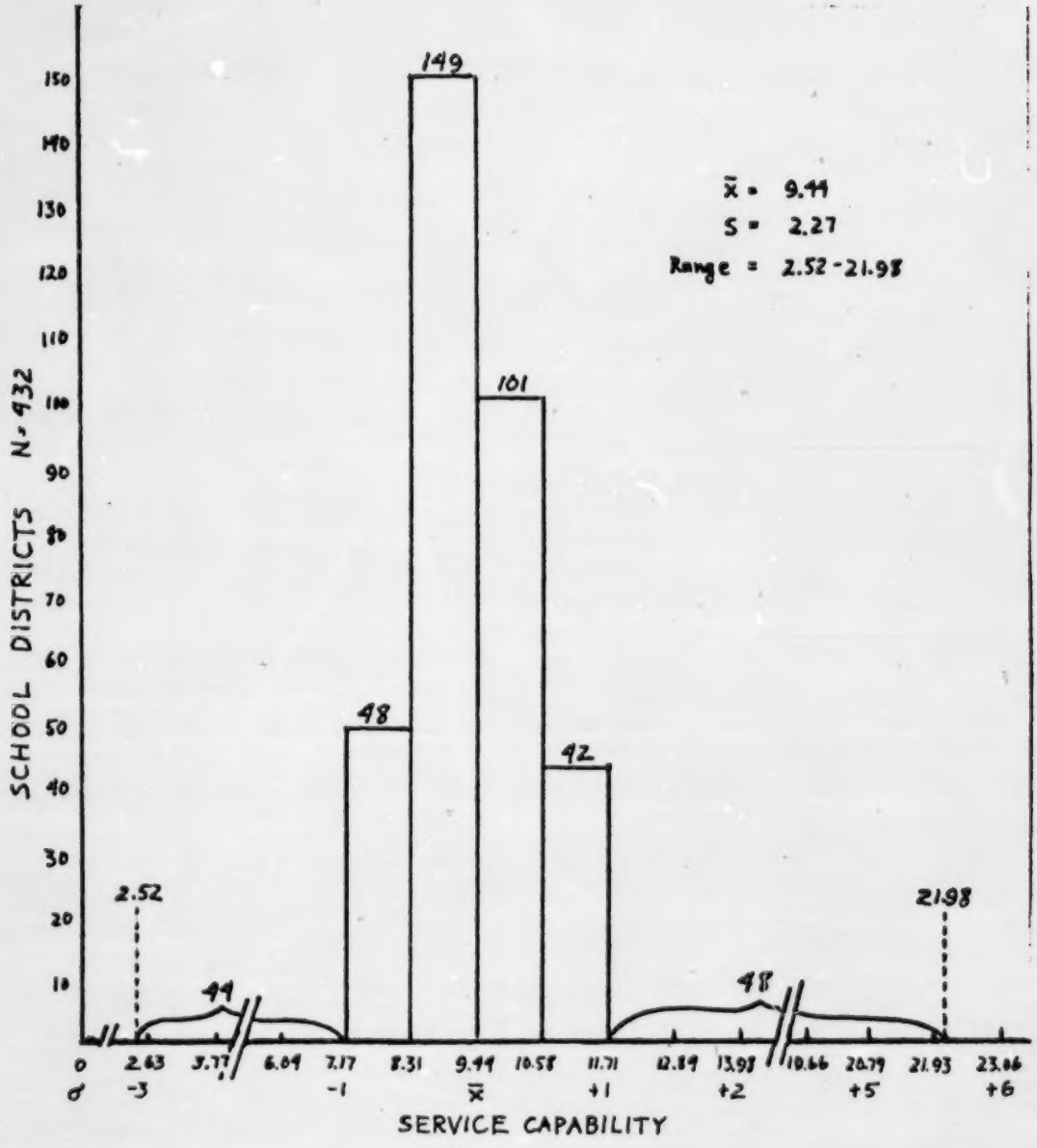


FIGURE 11

DISTRIBUTION OF SCHOOL DISTRICT SERVICE CAPABILITY SCORES, 1977-1978

SECONDARY ENGLISH

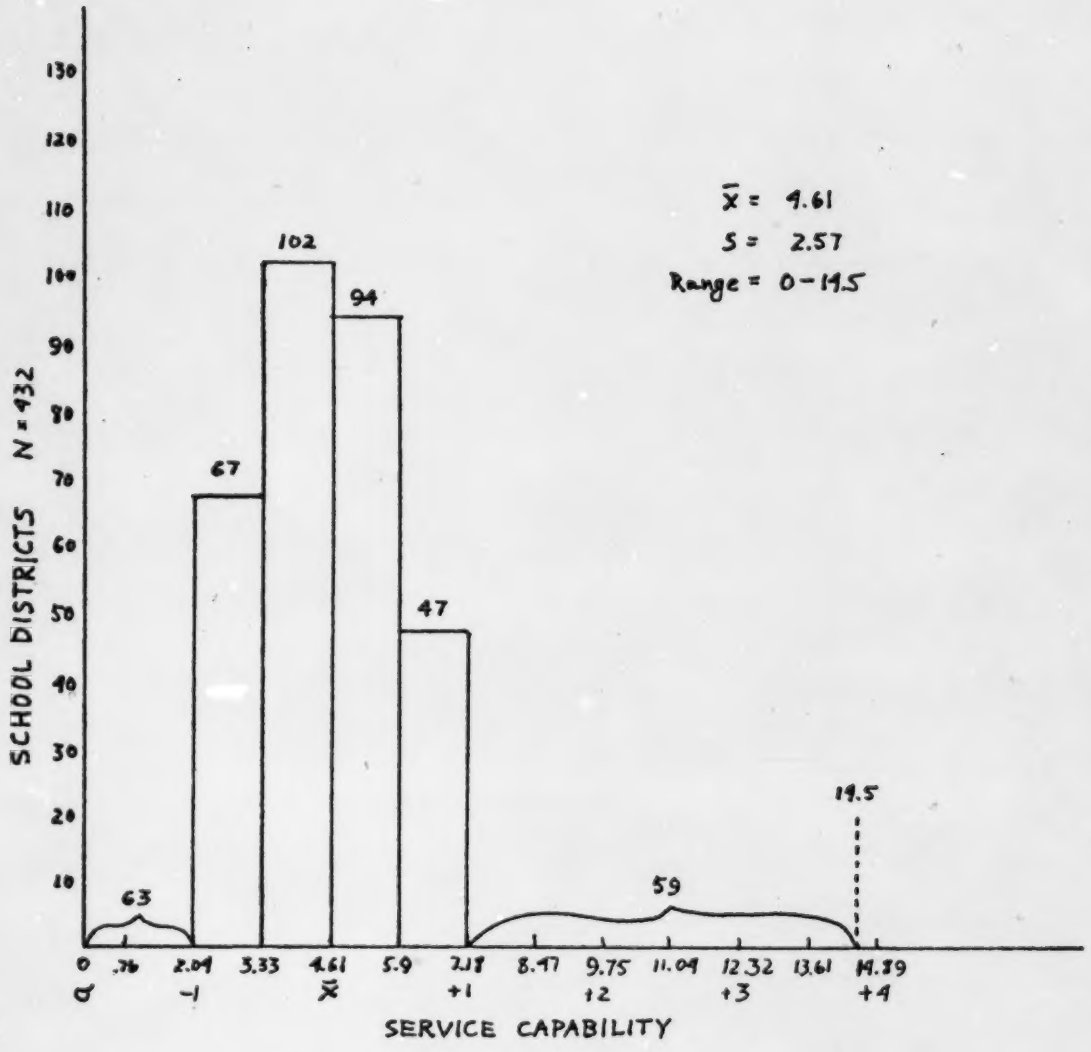


FIGURE 12

DISTRIBUTION OF SCHOOL DISTRICT SERVICE CAPABILITY SCORES, 1977-1978

TOTAL SPECIAL EDUCATION

viations above the mean. The descriptive statistics show that some districts have extremely high service capability which skews the distribution. There are seventy-three districts (17 percent) beyond one standard deviation above the mean.

The findings from research question A indicate that those districts with very high service capability will tend to be the smaller districts since there is a negative correlation between district enrollment size and service capability scores. These smaller districts have fewer students per staff in the aggregate service areas which results in a high service capability score.

The special education service area shows a similar skewness to the right. However, the distribution seems more flattened with districts more equally distributed into those intervals below the mean.

In summary, the tables and the frequency distribution graphs show extensive school district variation in the service areas. The large standard deviations seem to be caused by districts with high service capability scores which influence the value of the mean and a consistent skewing to the right.

Research Questions C and D

Regional characteristics and differences are being analyzed more frequently in policy related research in Minnesota. Therefore, information regarding the service capability of school districts in each development region was developed and analysis conducted of differences in means and in variability.

Research question C asked, "What differences exist among the mean service capabilities of Minnesota school districts when stratified by development region?" Research question D asked,

"To what extent does variability in service capability of Minnesota school districts differ among development regions?"

Findings

Tables were developed for thirty-eight of the taxonomic categories of service areas with the regional means and standard deviations displayed. Differences among the mean service capabilities of Minnesota school districts when stratified by development regions were determined by one-way analysis of variance. Differences in variability of service capability among development regions was determined by comparing regional variances using Bartlett's homogeneity of variance test for twelve taxonomic service areas.

Summary tables were developed to better display the data. Table 2 shows the results of the significance test for the major aggregate areas of the taxonomy. All of these show significant differences among the regional means.

Table 3 shows the results of the significance test of differences in variability of school districts among the development regions. None of the categories show a significant difference in variability of districts among the regions. This lack of significance indicates that variability of districts within one region is not significantly different from variability of districts within another region.

The two tests demonstrate the point that comes out more clearly in questions dealing with enrollment size differences. That is, the significant differences in service capability occur between small districts and larger districts. That difference

TABLE 2

DIFFERENCES IN MEAN SERVICE CAPABILITIES
BETWEEN MINNESOTA DEVELOPMENT REGIONS, 1977-1978

Service Area	Between Groups Mean Square	Within Groups Mean Square	F
Total Administration	33.1983	2.9563	11.23*
Total Elementary Reg. Inst.	1041.0241	101.9555	10.21*
Total Secondary Reg. Inst.	1004.8681	103.4111	9.71*
Total Regular Inst.	968.4668	68.3579	14.16*
Total Elementary Spec. Ed.	70.9941	14.5420	4.88*
Total Special Ed.	33.0021	5.8386	5.65*
Total Pupil Personnel	4.7302	.7397	6.39*
Total Library-Media	1.1110	.6027	1.84*
Total Licensed District Staff	1085.0431	89.4074	12.13*

* significant at .05 level, with degrees of freedom = 12/419

TABLE 3

DIFFERENCES IN VARIABILITY OF SERVICE CAPABILITY AMONG REGIONS - MAJOR AGGREGATE CATEGORIES

Service Area	X^2
Total Administration	134.29
Total Elementary Regular Instruction	106.89
Total Secondary Regular Instruction	105.87
Total Regular Instruction	105.97
Total Elementary Special Education	44.57
Total Special Education	40.49
Total Pupil Personnel	28.02
Total Library-Media	61.14
Total Licensed District Staff	113.88

Note: X^2 values greater than 467 are significant at .05 level, degrees of freedom $\geq$ 418. Critical X^2 of 467 calculated by solving $Z = \sqrt{2X^2} - \sqrt{2\,df-1}$ for X^2

TABLE 4

MEAN SERVICE CAPABILITIES OF MINNESOTA SCHOOL DISTRICTS IN MAJOR SERVICE CATEGORIES IN MINNESOTA DEVELOPMENT REGIONS, 1977-78

Region	Total Admin.	Total Elem. Reg. Inst.	Total Sec. Reg. Inst.	Total Reg. Inst.	Total Spec. Educ.	Total Pupil Pers.	Total Lib. Media	Total Lic. Dist. Staff
1	5.87	59.60	66.24	62.74	5.08	.86	1.47	77.42
2	4.22	52.45	53.71	53.00	7.19	1.26	1.44	68.30
3	3.36	47.28	52.32	49.88	4.43	1.36	1.27	61.47
4	4.69	56.12	57.46	56.56	5.22	.84	1.58	69.80
5	4.00	50.13	53.00	51.33	4.90	1.17	1.66	64.17
6E	4.53	53.35	59.99	56.92	4.06	1.23	1.61	69.72
6W	4.83	59.13	59.77	59.24	3.32	.56	1.72	70.75
7E	3.68	43.78	53.20	48.71	5.15	1.04	1.72	61.52
7W	2.87	47.71	50.74	49.03	5.23	1.30	1.48	61.13
8	4.97	56.87	62.46	59.61	2.47	.68	1.58	70.18
9	4.71	55.63	60.42	58.05	4.37	.95	1.92	71.16
10	3.97	52.09	54.64	53.27	4.72	1.04	1.61	65.46
11	2.36	42.36	47.95	45.14	5.24	1.93	1.34	57.70
STATE MEAN	4.17	52.26	56.56	54.35	4.60	1.10	1.57	66.95

is reflected in significant differences in regional means since some regions consist largely of small school districts. However, each region has both large and small districts so differences in variability of school districts in regions result in between region variability not being significant.

An interesting consistency in differences in regional means can be seen in Table 4. Region 1 and Region 11 always represent the extremes in the major instructional categories. Region 1 has the largest mean and Region 11 the smallest in Total Elementary Regular Instruction, Total Secondary Regular Instruction, Total Regular Instruction, and Total Licensed Staff.

Research Question E

Research question E asks, "What number and proportion of Minnesota school districts with service capability greater than or equal to or less than one standard deviation below the state mean occurs in the state and in each enrollment size category?" This is the first research question in which a potential criterion level indicating adequacy of program was used. Contingency tables were developed to address the question. Differences between size categories were analyzed by chi square tests.

Findings

Table 5 and 6 display the number and proportion of school districts with service capability scores less than one standard deviation below the state mean for selected service areas and for the state. The chi square tests for difference between groups were all significant at the .05 level. Table 7 shows the chi square test results.

If service capability scores were normally distributed, it could be expected that 16 percent of the school districts' service capability scores would fall below one standard deviation below the mean. Tables 5 and 6 show that in only Total Pupil Personnel is that the case. The two Special Education categories are close with 14 percent and 15 percent. The other assignment categories range from seven percent to 13 percent. The previous discussion regarding frequency distributions of districts' service capability scores pointed out the sharp slope of the distribution on the left side with the right tail skewed raising the mean for all of the large aggregate service areas. This phenomenon also increases the size of the standard deviation. This effects the major service areas dealt with in this research question by reducing the number of cases less than one standard deviation below the mean. Those figures also show the heavy concentration of districts around the mean and a short tail to the left.

As Table 8 shows, this criterion level identifies 59 percent of the school districts in size category greater than 5000, less first class cities, as being below criterion for Total Regular Instruction. This is a disturbing finding since that group includes districts which have been known as having excellent instructional programs.

In summary, using one standard deviation below the mean as a criterion level produced results similar to other analysis in which district enrollment size was a variable. This is, in the major service areas used, the enrollment categories containing school districts with the largest enrollments show the greater proportion

TABLE 5

NUMBER OF MINNESOTA SCHOOL DISTRICTS WITH SERVICE CAPABILITIES LESS THAN ONE STANDARD DEVIATION BELOW THE STATE MEAN BY ENROLLMENT SIZE CATEGORIES IN SELECTED SERVICE AREAS, 1977-1978

Service Area	ENROLLMENT							
	0-299	300-799	800-1799	1800-2999	3000-4999	5000+ not 1st Class	1st Class	STATE
	NUMBER							
Total Administration	2		2	8	10	21	1	44
Total Elem. Reg. Inst.	1	5	9	9	7	15	1	47
Total Sec. Reg. Inst.	2	2	15	4	5	2	2	32
Total Reg. Instruction		3	14	10	10	19	3	57
Total Elem. Spec. Ed.	23	39	2	1				65
Total Spec. Ed.	22	39	2					63
Total Pupil Personnel	51	72	6					129
Total Library-Media	18	15	8	5	2	3		51
Total Lic. Dist. Staff		3	10	8	11	17	1	50

TABLE 6

PERCENT OF MINNESOTA SCHOOL DISTRICTS WITH SERVICE CAPABILITIES LESS THAN ONE STANDARD DEVIATION BELOW THE STATE MEAN BY ENROLLMENT SIZE CATEGORIES IN SELECTED SERVICE AREAS, 1977-1978

Service Area	ENROLLMENT							
	0-299	300-799	800-1799	1800-2999	3000-4999	5000+ not 1st Class	1st Class	STATE
	PERCENT							
Total Administration	3		2	24	36	66	33	10
Total Elem. Reg. Inst.	2	3	8	26	25	47	33	11
Total Sec. Reg. Inst.	3	1	13	12	18	6	67	7
Total Reg. Instruction		2	12	29	36	59	100	13
Total Elem. Spec. Ed.	40	24	2	3				15
Total Special Ed.	38	24	2					14
Total Pupil Personnel	88	45	5					30
Total Library-Media	31	9	7	15	7	9		12
Total Lic. Dist. Staff		2	8	24	39	53	33	11

TABLE 7

TEST FOR DIFFERENCE IN NUMBER OF MINNESOTA SCHOOL DISTRICTS WITH SERVICE CAPABILITIES LESS THAN OR EQUAL TO OR GREATER THAN ONE STANDARD DEVIATION BELOW THE STATE MEAN AMONG ENROLLMENT SIZE CATEGORIES 1977-1978

Service Area	X^2
Total Administration	168.48*
Total Elem. Reg. Instruction	82.52*
Total Secon. Reg. Instruction	24.19*
Total Regular Instruction	121.35*
Total Elem. Spec. Education	66.26*
Total Special Education	69.81*
Total Pupil Personnel	182.57*
Total Library-Media	25.69*
Total Licensed District Staff	99.79*

* significant at the .05 level with 6 degrees of freedom.

TABLE 8

PERCENT OF SCHOOL DISTRICTS WITH SERVICE CAPABILITY SCORES LESS THAN ONE STANDARD DEVIATION BELOW THE MEAN FOR ENROLLMENT SIZE CATEGORIES IN MAJOR SERVICE AREAS, 1977-1978

Service Area	ENROLLMENT						
	0-299	300-799	800-1799	1800-2999	3000-4999	5000+ not 1st Class	Cities of 1st Class
	PERCENT						
Total Reg. Instruction		2	12	29	36	59	100
Total Elem. Reg. Inst.	2	3	8	26	25	47	33
Total Sec. Reg. Inst.	3	1	13	12	18	6	67
Total Lic. Dist. Staff		2	8	24	39	53	33

of districts having service capability scores below the criterion. In the Pupil Personnel and Special Education categories, these same enrollment size districts show no school districts below the criterion. Service capability scores for the Special Education categories for small enrollment districts cannot be used because of reporting problems.

Research Question F

Research question F asks, "What number and proportions of Minnesota school districts meet or exceed the standard service capability derived from Committee of 21 recommendations within each region, each enrollment size stratification, and the state?" Contingency tables were developed to address the question. Significance tests were not reasonable to use as the discussion will point out.

This question addresses directly a major education policy issue. That is, the monitoring of adequacy of instructional programs using an adequacy criterion established by a policy group. In Minnesota, the recommendations of the Minimum Standards for Secondary Education Task Force (the Committee of 21) is the most recent effort to define adequacy of program.

Findings

The contingency tables developed for this question show so few school districts below the standard set by the Committee of 21 that significance tests for differences between regions and size categories were not done.

Table 9 displays the number and proportions of school districts meeting the standard set by the Committee of 21 recommendations.

TABLE 9

NUMBER AND PROPORTIONS OF MINNESOTA SCHOOL DISTRICTS MEETING THE RECOMMENDED STANDARDS OF THE COMMITTEE OF 21, 1977-1978

Instructional Category	Number		Percentage	
	Below	Above	Below	Above
Personal Development	11	421	2.5	97.5
Communications and Cultural Studies	6	426	1.4	98.6
Societal Studies	29	403	6.7	93.3
Mathematics, Science, and Technology	1	431	.2	99.8
Career and Vocations	11	421	2.5	97.5
Total Secondary Regular Instruction	1	431	.2	99.8

From one district to twenty-nine districts fall below the standard in the subcategories. The derived service capability level for Total Secondary Regular Instruction is 34.25, which is 1.88 standard deviations below the state mean of 55.56. If the Committee of 21 recommendations were adopted, all but one school district in the state would meet the general standard of an adequate secondary program.

Table 5 discussed earlier shows that forty-seven school districts fail to meet the one standard deviation below the state mean standard for Elementary Regular Instruction. Using those separate standards, about ten percent of Minnesota school districts would fail to meet a standard of adequate instructional program.

Table 10 displays districts not meeting the standards by size category. It is difficult to draw conclusions from so few cases; however, a similar phenomenon is evident here as in other analyses of size differences. The districts with enrollment size less than 800 students have a different pattern than those above 800. Forty of the fifty-eight incidences of districts not meeting the standards for the subcategories fall into that group. This is different than the disparity pointed out in question G in which a greater proportion of larger districts fell below the standard of one standard deviation from the state mean. The Committee of 21 service capabilities standard for Total Secondary Regular Instruction is considerably below the standard of less than one standard deviation. However, to derive the Committee of 21 standard for subcategories, it was necessary to aggregate service areas. A State Department of Education report showed that small

TABLE 10

SCHOOL DISTRICTS IN EACH ENROLLMENT SIZE CATEGORY WITH SERVICE CAPABILITIES LESS THAN RECOMMENDED STANDARDS OF THE COMMITTEE OF 21, 1977-78

	Total Districts	Personal Development	Communications and Cultural Studies	Societal Stud.	Mathematics, Science and Technology	Careers and Vocations	Total Secondary Regular Instruction	TOTAL
0-299	58		2	6		2		10
300-799	160	5	4	19	1	1		30
800-1799	120	4		2		3		9
1800-2999	34	1		2		2	1	6
3000-4999	26					2		
5000 less 1st Class	32	1				1		2
Cities of 1st Class	3							
TOTAL	433	11	6	29	1	11	1	

schools averaged 32 secondary teacher course assignments in the 1976-1977 school year and large schools averaged 109 assignments. The combined service capability in the Committee of 21 categories captures the breadth of course offerings in larger school districts in contrast to fewer course offerings in smaller school districts.

In summary, the data show only a few school districts not meeting the standards recommended by the Committee of 21. The size aggregates show school districts with fewer than 800 students more often being below the standards of the subcategories compared to larger districts.

SUMMARY AND CONCLUSIONS

Equality of Education Opportunity

The criteria used for assessing equality of educational opportunity in the study was a derived standard from measures of common practice and a derived standard from recommendations to a state-level policy group. Common practice was seen as a reasonable criterion, as it was listed as one possibility in the Washington State school finance decision which struck down that state's school finance system. (65) The measure used was service capability which is a statistic representing full-time equivalent professional staff per thousand students in education assignment area.

One Standard Deviation Below the State Mean as a Standard

A standard of one standard deviation below the mean recognizes that common practice will usually result in clustering around the mean and the standard deviation statistic will bracket the predominant reality. Since the optimum relationship between the number of staff per students in education assignment areas is not clear from the research, this broader, less exact standard for common practice was deemed appropriate.

Using one standard deviation below the state mean for school district service capability scores as a standard, the study showed that in the assignment category Total Licensed Staff 50 school districts (11 percent) did not meet that standard and in the assignment category Total Regular Instruction 57 school districts (13 percent) did not meet the standard.

The conclusion can be drawn that, given that standard and accepting service capability as the measure, students in nearly 90 percent of the state's school districts have equal access to education opportunity.

The results of the study show that the criterion standard of one standard deviation below the state mean has potential as a criterion for equal education opportunity. This potential loses some of its face validity as the list of school districts not meeting this standard of equal educational opportunity is reviewed. The presence of prestigious districts below the criterion level makes the criterion lose credibility and would make a policy body like the State Legislature or the State Board of Education less likely to seriously consider that criterion standard.

If it were desired to pursue the criterion standard further, several points in its defense could be made. It is possible that staff-to-student ratios in these highly regarded school districts have declined so severely that there is a decline in educational opportunity for their students. If this were true, evidence of the decline such as achievement scores, college achievement, personal success or other measures would not appear immediately and old reputations would prevail.

A statistical adjustment could be made which might reduce the number and characteristic of the group below the one standard deviation below the mean criterion level. That manipulation would be to eliminate a group of very small districts with very high service capabilities from the distribution, resulting in a restricted range. These very small districts tend to have rapidly declining enrollments and maintain a core educational program with

fewer students per staff members. This manipulation would lower the state mean service capability scores and might bracket in these larger districts if the variability measure, the standard deviation, remained large.

Another approach might set the state mean at the mean student rather than the mean school district. By that is meant that the means and standard deviations would be computed from the characteristics of the size category in which the school districts containing the mean student falls. The standard for the present study using the mean school district results in counting the very small districts as equal to the very large districts. From the student point of view, this unrealistically represents the experience of most of the state's students. For example, the fifty-eight school districts in the 0-299 enrollment category had 10,102 students in 1976-1977, one percent of the total enrollment. The thirty-three school districts in the largest enrollment categories had 472,473 students, fifty-two percent of the total enrollment.

This statistical approach to defining common practice and establishing a criterion for equal educational opportunity proves possible but with weaknesses. The study demonstrated that it can be used with the service capability measure.

Committee of 21 Recommendations as a Standard

The Minimum Standards for Secondary Education Task Force (the Committee of 21) made its recommendations to the Minnesota State Board of Education in March, 1978. The State Board has statutory power to set state education policy. The recommendations propose

standards in five aggregate instructional areas. To derive a service capability score for each of the Committee of 21 categories, it was necessary to combine taxonomic categories.

Using the criterion standard derived from recommendations to a policy-setting body and service capability as the measure, all but one Minnesota school district achieved that standard of providing equal educational opportunity to its students. Table 11 shows the results for the subcategories. The largest number below the criterion standard is twenty-nine school districts. Assuming that the recommended standards were adopted, the study shows that even in the subcategories nearly all Minnesota school districts achieve a standard of equal educational opportunity for their students.

Using this criterion measure for equal educational opportunity districts with different characteristics fail to reach the criterion level compared to the previous standard of one standard deviation below the state mean. Even though the number of cases are small, forty of the fifty-eight cases of school districts not meeting the criterion are small school districts, under 800 students. This is in striking contrast to the previous situation in which the preponderance were the larger districts.

Several explanations are possible for this turn-about. The service capability level for Total Secondary Regular Instruction of 34.25 is considerably below the criterion level of one standard deviation from the mean set for the previous test. That service capability figure is 45.22. The 34.25 score is 1.88 standard deviations below the mean. It can be assumed that this also holds true for the Committee of 21 subcategories.

TABLE 11

NUMBER OF DISTRICTS NOT ACHIEVING THE STANDARD OF ADEQUACY RECOMMENDED BY THE COMMITTEE OF 21, 1977-1978

Instructional Category	Number* Below
Personal Development	11
Communications and Cultural Studies	6
Societal Studies	29
Mathematics, Science, and Technology	1
Career and Vocations	11
Total Secondary Instruction	1

* Total Districts N = 432.

The small number of districts below the criterion level for the Committee of 21 sub-categories can reasonably be attributed to the effect of aggregating assignment categories from the service capability taxonomy. This increases the service capability score for those school districts which provide instruction in many of the taxonomic categories. If the larger school districts offer instruction in more secondary instructional areas than small school districts, this would explain the finding that more small districts are below the Committee of 21 sub-category criterion than large districts. In an unexpected way, the study found that by combining assignment categories of the taxonomy the service capability measure was sensitive to the breadth of course offerings provided by school districts. A current interest in adequacy of program of school districts is that of breadth of offering rather than only service capacity in discrete assignment areas.

The study found that the service capability statistic can be used as a measure for equal educational opportunity if a criterion level was established by a policy group.

Service Capability and School District Enrollment Size

School district enrollment size is an important variable in education policy studies. Certainly in Minnesota with numerous districts and great variation in enrollments, this is true. The controversy around fiscal efficiency and program adequacy of small schools versus large schools is again heating up. Conventional wisdom has been that small schools are less cost efficient and provide less educational opportunity than do large schools. This study was not interested in contributing to the controversy but did investigate several questions which dealt with program levels and standards of equity.

Figures 1-3 show regression lines depicting the relationship between service capability scores of districts and enrollment size. There is a strong negative relationship between these variables for the major instructional categories. Districts with small enrollments tend to have high service capability scores. This relationship holds until about an enrollment size of 1,000 on those figures. For the statistically derived criterion standard of adequate program, one standard deviation below the state mean, the small districts tend to provide more adequate instructional programs than do larger enrollment districts. (See Table 8.)

The earlier discussion regarding criterion standards derived from the Committee of 21 recommendations reverses this for those aggregate instructional categories. This reversal was attributed to the combining of secondary course offerings into the categories which accounts for the larger enrollment districts being nearly universally above the criterion level.

The study can draw little from all this. However, there are indications that some change takes place in service capability levels in the enrollment range around 800-1,000 students and warrants further study.

Summary Conclusion and Recommendations

The study demonstrated that the service capability statistic is useful to measure school districts achieving a standard of adequacy of educational program.

Several criterion standards were tested for defining adequacy of educational program. One standard deviation below the state mean provides

a potentially useful criterion; however, it was found wanting in credibility because of the reputation of the school districts below that standard.

The criterion standard derived from recommendations of the Committee of 21 showed potential usefulness. Few districts failed to achieve the standard which may mean that the standard was too low or that Minnesota school districts are providing equal educational opportunity to their students. The aggregate subcategories in the Committee of 21 recommendations are so broad as to allow wide variation in specific services offered. In Minnesota with its history of strong local autonomy and decentralized authority, this general approach may better fit the monitoring levels acceptable to local government authorities. Certainly, the fear expressed by some Minnesota educators of Committee of 21 standards are unfounded.

The analysis of the enrollment size variable brings out greater concern for what may be happening in large school districts. Some large districts' service capability scores compared to the state mean may be identifying situations in which class size has become detrimental to effective education. It might also indicate a weakness in the reporting system and concept which supports the service capability statistic. Practice in these larger districts might be different, effective and not reported. For instance, the use of teacher aides or other ancillary personnel for enhancing instruction would not be reported and included in a school district's capacity to provide service. The conceptual base for the

service capability measure includes only professionally licensed staff as the key resource. The full implementation by state school districts of the Uniform Financial Accounting and Reporting system will add reliability to the present reporting on which the statistic is based and would also permit identification and adding of other personnel.

This line of concern leads to a recommendation that validation studies be conducted on the service capability measure. Thus far, research and development have been conducted in the abstract using state-level data sets. This is appropriate, and the research has been conducted by investigators familiar with the school district setting. It is time to take the concept and district level profiles to the districts to see what the statistic full-time equivalent per thousand students means in practice.

The research and development thus far has consistently shown promise of the service capability measure for monitoring the important instructional capacity of school districts. The concept has found ready acceptance and understanding by state-level policymakers. This study has demonstrated its usefulness as a measure for equal educational opportunity. Further development for its use as a monitoring tool by the State Department of Education is warranted.

There is no pressure on Minnesota's school finance system at present which would indicate the need to shift to a non-fiscal measure to determine equal access to educational opportunity. However, it would be useful to be able to move toward an acceptance of a

non-fiscal measure of adequacy. Present state education policy is so intricately entwined with state tax policy that policy-makers must always weigh the two together. If there were an accepted criterion for educational adequacy which could be assessed by a non-fiscal measure, the deliberations on education issues could more easily be kept separate from tax and fiscal equity issues.

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